
Contribution of Tourism Industry to the National Economy under the AHP

Wei Wang

*Zhejiang College of Zhejiang University of Technology,
Hangzhou 310024, Zhejiang, China*

Abstract

The tourism industry is a comprehensive industry, the status of industry in the national has become increasingly important, and closely linked with other industries, the adjustment of economic structure and optimization play a key role, in order to study the contribution of the tourism industry to the national economy scientifically and reasonably, this paper based on AHP (Analytic Hierarchy Process) analysis the role of tourism income completely in GDP, tourism foreign exchange earnings increased role of foreign investment, the role of tourism in poverty alleviation and development of other factors, Elaborate the tourism industry in economic growth, the consumer society, employment tripartite social contribution of the national economy in the face.

Key words: CHINA'S TOURISM INDUSTRY, THE NATIONAL ECONOMY, AHP, CONTRIBUTION

Introduction

After the reform and opening up, the rapid rise of tourism has become a comprehensive industry, and with the lodging industry, transport, post and telecommunications industry and other related industries, there is a strong economic relevance [1][2]. Now, the tourism industry has become an important industry in the national economy, tourism industry of national economy as well as stimulating and promoting related industries to become more prominent [5].

Since the 21st century, the study of the status of tourism industry in the national economy began to increase. Among them the mainly individual provinces to study the tourism industry output research contribution to national economy. Zhang Jinhe and Lu Lin based tourism revenue

targets, the use of GDP tourism dependence and regression analysis on the contribution of the tourism industry to the national economy [7]. In the "Contribution of China's tourism industry to the national economy" Zhang Wenrui use method tourism industry added value calculate the added value of tourism industry for future, to analyze the contribution of the national economy [4]. The early 1990s, the World Travel & Tourism Council (WTTC) research report, tourism value added contribution to global GDP has more than other industries to become the world's largest industry [3].

Stimulating economic growth, promoting the consumer society, and increasing the employment community tourism industry is the main way to contribute to the national

Economy

economy[6], and to find the weight value of each index is an important basis for the development of the tourism industry priority, analytical hierarchy proposed model establish a scientific system of weights.

Contribution of Tourism industry to the national economy

Table 1, Table 2 and Figure 1 combine analysis: we can conclude the close relationship of the added value of the tourism, the tourism industry and the national economy.

Table 1.The development of China's tourism industry

Index	2013	2012	2011	2010	2009	2008	2007
Travel agency number (pcs)		24944	23690	22784	20399	20110	18943
Total Star Hotel(pcs)		12807	13513	13991	14237	14099	13583
International Tourism Foreign Exchange Income (\$ million)	51664	50028	48463	45814	39675	40843	41919
Total domestic tourism (hundred million RMB)	26276	22706	19305	12580	10184	8749	7770

Table 2. Tourists changes in China's tourism industry

Index (million persons)	2013	2012	2011	2010	2009	2008	2007
Inbound tourists	12908	13241	13542	13376	12648	13003	13187
Visitors to foreigners	2629	2719	2711	2612	2194	2433	2611
Passengers from Hong Kong, Macao and Hong Kong	9763	9987	10304	10249	10005	10131	10114
Taiwan compatriots inbound tourists	516	534	526	514	448	439	463
Tourists overnight	5569	5772	5758	5566	5088	5305	5472
The number of domestic residents	9819	8318	7025	5739	4766	4584	4095
The number of private persons in the country for the private country	9197	7706	6412	5150	4221	4013	3492
Domestic tourists	326200	295700	264100	210300	190200	171200	161000

The 2007--2013 Changes in domestic tourism consumption, the total production of the tertiary industry and GDP is shown in Fig.1.

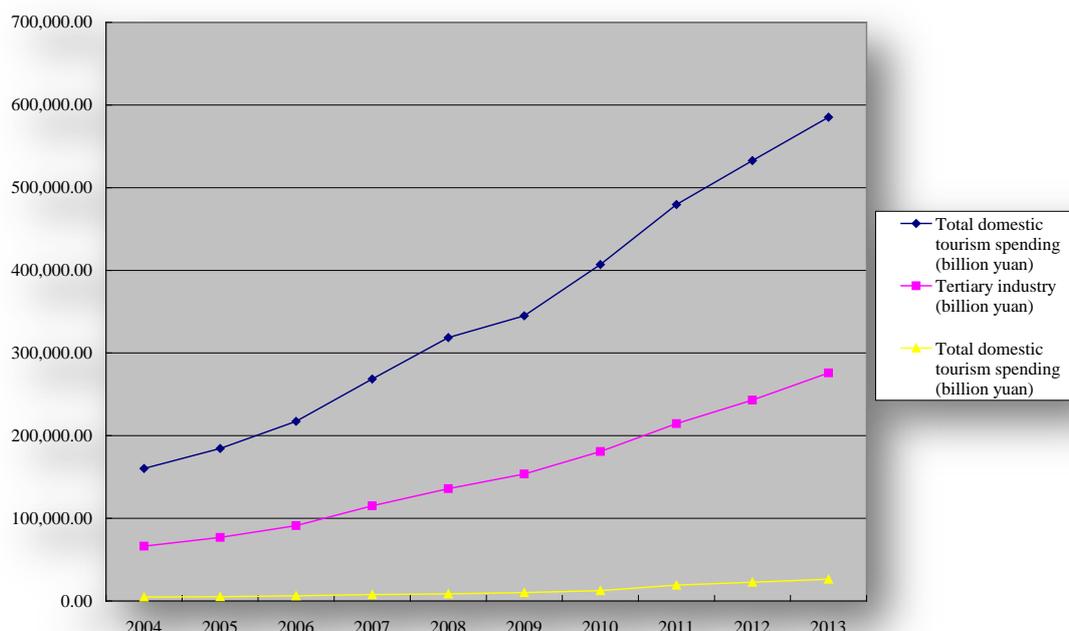


Figure 1. The trend of Domestic tourism consumption, China's third industry GDP and GDP

From the trend of Domestic tourism consumption, China's third industry GDP and GDP can be drawn, China's tourism consumption accounts for a large proportion of China's GDP. Therefore, it is necessary to study the contribution of China's tourism industry to the national economy.

Establish hierarchical structure

Establish goals, rule, and scheme layer relationship.

Target layer: China's contribution to the tourism industry to the national economy

Criterion level: c_1 is factors programs for tourism revenue effect entirely on GDP, c_2 is tourism foreign exchange earnings to increase the role of foreign capital utilization, c_3 is the role of tourism in poverty alleviation and development of, c_4 is the expansion of employment in the tourism industry plays an important effect.

Program level: A_1 is boost the economic growth, A_2 is promote the consumer society, and A_3 is increase the employment community. Get hierarchical structure, as shown in Figure 2.

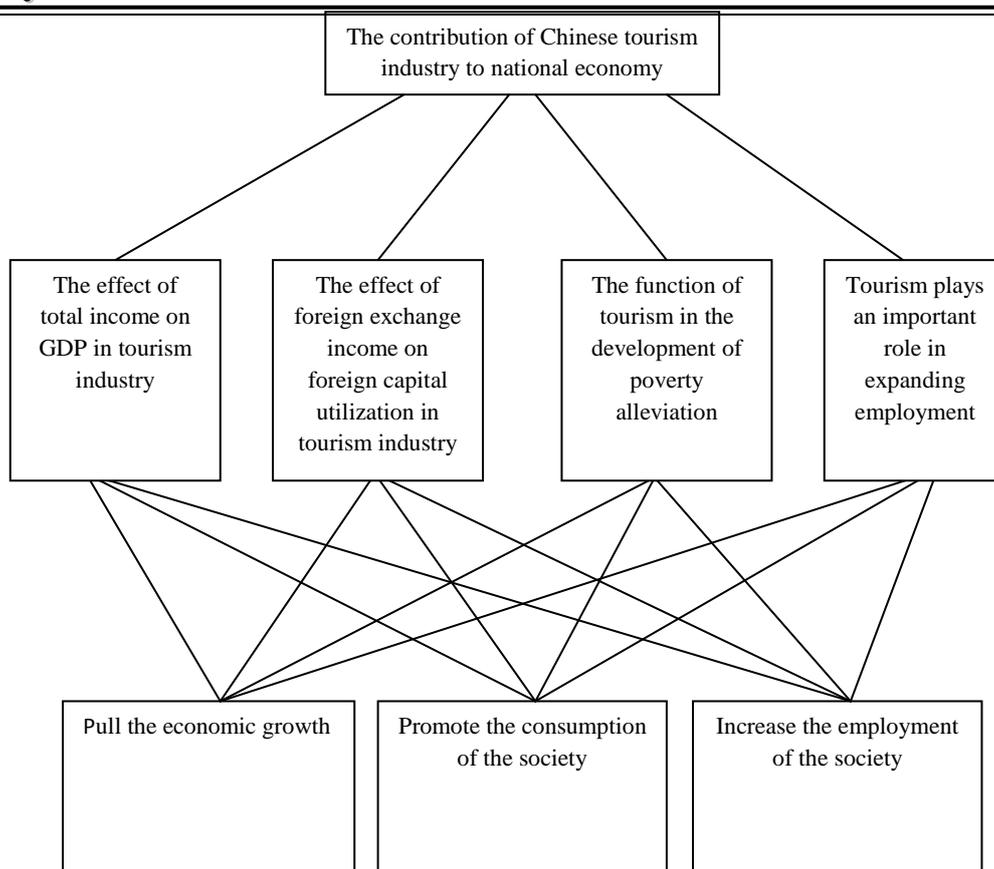


Figure 2. Hierarchical structure

The judgment matrix of all levels is constructed.

Guidelines layers each target share different criteria, be studied by the researchers criteria level, according to the numbers 1 to 9, with its inverted value to determine the proportion

of each criterion goals. To weight analysis, first draw pair wise comparison matrices, respectively Table 2-6. In Table 2 comparison matrix between the target layer and the rule layer, and Table 3-6 for the comparison matrix criterion layer and programs between the layers.

Table 2. The first level comparison matrix

G	c_1	c_2	c_3	c_4
c_1	1	1/3	3	3
c_2	1/8	1	5	5
c_3	1/3	1/5	1	1
c_4	1/3	1/5	1	1

Table 3. The second level comparison matrix

c_1	A_1	A_2	A_3	c_2	A_1	A_2	A_3
A_1	1	1	1/3	A_1	1	8	7
A_2	1	1	1/3	A_2	1/8	1	5
A_3	3	3	1	A_3	1/7	1/5	1
c_3	A_1	A_2	A_3	c_4	A_1	A_2	A_3
A_1	1	5	8	A_1	1	3	8

A_2	1/5	1	1/3	A_2	1/3	1	5
A_3	1/8	3	1	A_3	1/8	1/5	1

Single-level sorting and consistency check

In comparison matrix, λ_{\max} is the maximum Eigen value, n is the matrix of the order of comparison

$$CI = \frac{\lambda_{\max} - n}{n - 1}$$

The value of CI reflects the consistency of the matrix, the smaller the value, the higher the consistency.

The total level sorting and consistency check

$$A = \begin{pmatrix} 1 & 1/3 & 3 & 3 \\ 3 & 1 & 5 & 5 \\ 1/3 & 1/5 & 1 & 1 \\ 1/3 & 1/5 & 1 & 1 \end{pmatrix}$$

After normalization, and then summed to obtain the line:

$$W = \begin{pmatrix} 1.066 \\ 2.22 \\ 0.386 \\ 0.386 \end{pmatrix}$$

W normalized to give:

$$W^{(0)} = \begin{pmatrix} 0.2515 \\ 0.555 \\ 0.0965 \\ 0.0965 \end{pmatrix}$$

Can be obtained:

$$AW^{(0)} = \begin{pmatrix} 1 & 1/3 & 3 & 3 \\ 3 & 1 & 5 & 5 \\ 1/3 & 1/5 & 1 & 1 \\ 1/3 & 1/5 & 1 & 1 \end{pmatrix} \begin{pmatrix} 0.2514 \\ 0.555 \\ 0.0965 \\ 0.0965 \end{pmatrix} = \begin{pmatrix} 1.012 \\ 2.275 \\ 0.387 \\ 0.387 \end{pmatrix}$$

$$\lambda_{\max}^{(0)} = \frac{1}{4} \left(\frac{1.054}{0.257} + \frac{2.254}{0.786} + \frac{0.257}{0.045} + \frac{0.457}{0.078} \right) = 4.038$$

$$w^{(0)} = \begin{pmatrix} 0.278 \\ 0.56 \\ 0.045 \\ 0.098 \end{pmatrix}$$

Similarly, can be calculate the judgment matrix

$$B_1 = \begin{pmatrix} 1 & 1 & 1/3 \\ 2 & 1 & 1/3 \\ 3 & 6 & 1 \end{pmatrix}, B_2 = \begin{pmatrix} 1 & 5 & 5 \\ 1/5 & 1 & 2 \\ 1/5 & 1/5 & 1 \end{pmatrix}, B_3 = \begin{pmatrix} 1 & 6 & 8 \\ 1/5 & 1 & 5 \\ 1/8 & 1/5 & 1 \end{pmatrix}, B_4 = \begin{pmatrix} 1 & 8 & 8 \\ 1/5 & 1 & 5 \\ 1/8 & 1/5 & 1 \end{pmatrix}$$

Get the maximum Eigen values and eigenvectors

$$\lambda_{\max}^{(1)} = 3.31, \omega^{(1)}_1 = \begin{pmatrix} 0.252 \\ 0.089 \\ 0.66 \end{pmatrix},$$

$$\lambda_{\max}^{(2)} = 3.12, \omega^{(1)}_2 = \begin{pmatrix} 0.575 \\ 0.286 \\ 0.139 \end{pmatrix}$$

$$\lambda_{\max}^{(3)} = 3.30, \omega^{(1)}_3 = \begin{pmatrix} 0.624 \\ 0.240 \\ 0.136 \end{pmatrix},$$

$$\lambda_{\max}^{(4)} = 4.05, \omega^{(1)}_4 = \begin{pmatrix} 0.185 \\ 0.240 \\ 0.575 \end{pmatrix}$$

Inspection with consistency index: $CI = \frac{\lambda_{\max} - n}{n - 1}$,

$$CR = \frac{CI}{RI}$$

Get judgment matrix A , $\lambda_{\max}^{(0)} = 4.073$, Richard $RI = 0.9$

$$CI = \frac{4.073 - 4}{4 - 1} = 0.24$$

$$CR = \frac{CI}{RI} = \frac{0.024}{0.90} = 0.027 < 0.1$$

$CR < 0.1$ indicates inconsistent test of A is valid, and sports within the allowable range, available A feature vectors instead of the weight vector. Similarly, Judgment matrix B_1, B_2, B_3, B_4 verify the consistency, Get the weight vector. Get the results, as shown in Figure 3.

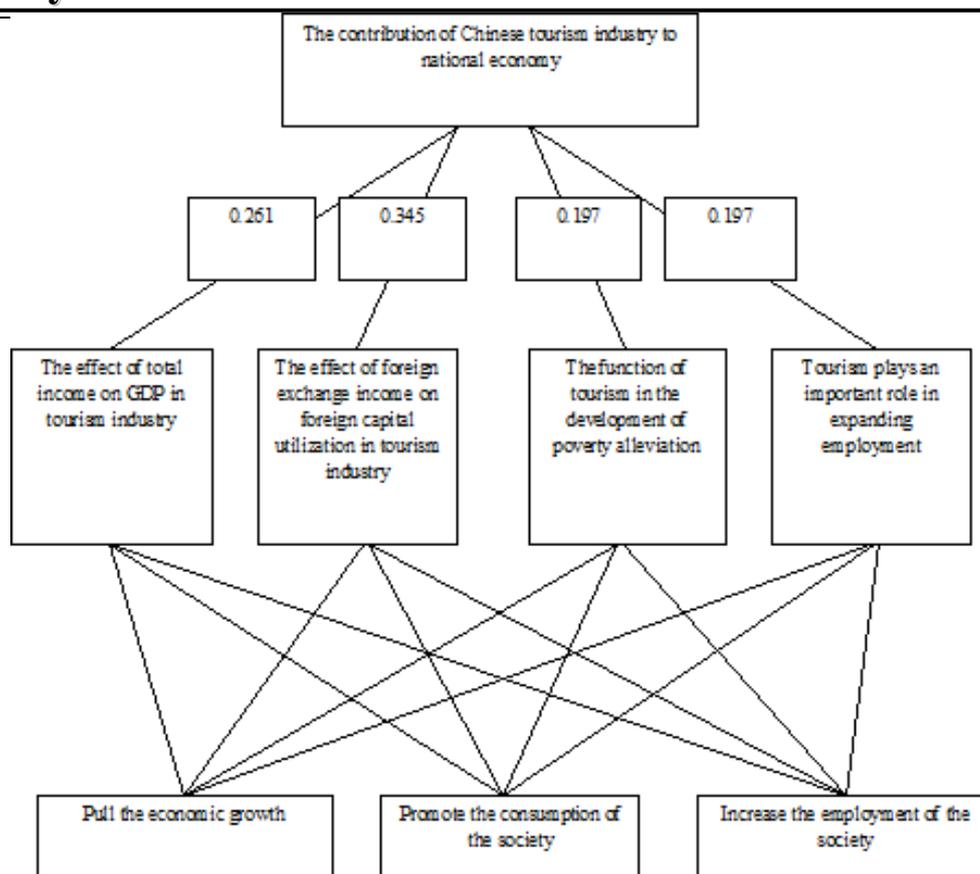


Figure 3. Hierarchy

The calculation process is as follows:

$$\omega^{(1)} = (\omega_1^{(1)}, \omega_2^{(1)}, \omega_3^{(1)}, \omega_4^{(1)})$$

$$= \begin{Bmatrix} 0.624 & 0.185 & 0.252 & 0.575 \\ 0.234 & 0.240 & 0.089 & 0.286 \\ 0.136 & 0.575 & 0.66 & 0.139 \end{Bmatrix}$$

$$\omega = \omega^{(1)} \omega^{(0)}$$

$$= \begin{Bmatrix} 0.262 & 0.585 & 0.664 & 0.185 \\ 0.079 & 0.276 & 0.220 & 0.240 \\ 0.66 & 0.149 & 0.156 & 0.575 \end{Bmatrix} \begin{Bmatrix} 0.567 \\ 0.056 \\ 0.104 \\ 0.273 \end{Bmatrix}$$

$$= \begin{Bmatrix} 0.43 \\ 0.30 \\ 0.27 \end{Bmatrix}$$

The result of the tourism industry in stimulating economic growth, promote the consumer society, increasing the employment contribution to the national economy three aspects of society were: 43%, 30%, 27%.

Conclusions

This paper analyzes the current status of tourism development based on China's tourism industry, Get GDP, the added value of the tertiary industry, and the development curve of total tourism spending. Get in stimulating economic growth and promoting the consumer society,

increasing the three areas, the contribution of the tourism industry for employment social name of the country's economy.

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